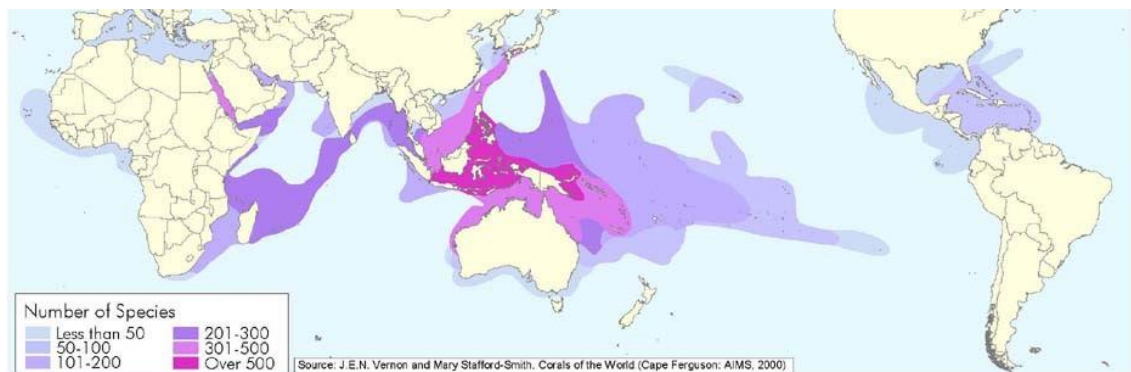


Coral Reefs & MARINE POLLUTION

Parcham Classes



Coral Reef

- Coral reefs are built by and made up of thousands of tiny animals—coral “polyps”—that are related to anemones and jellyfish.
- Polyps are tiny microscopic marine animals.
- When polyps die, their skeletons are left out.
- These left-out skeletons made up of Calcium carbonate are called simply coral or coral reef.
- These coral reefs grow higher and higher, and later coral island forms.
- coral islands (Lakshadweep)

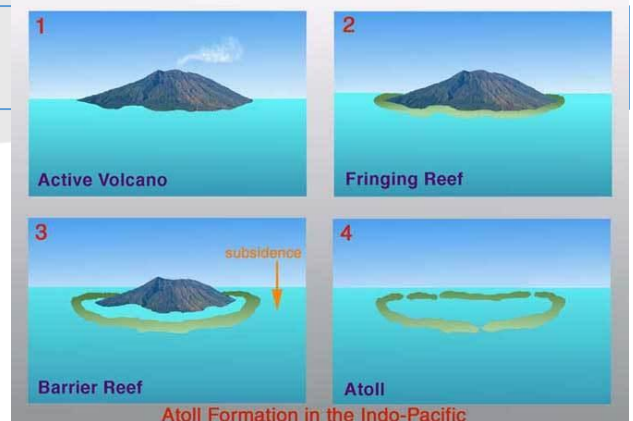
Ideal Conditions for Coral Growth

- **Stable climatic conditions:** Corals are highly susceptible to quick changes. They grow in regions where climate is significantly stable for a long period of time.
- **Perpetually warm waters:** Corals thrive in tropical waters [30°N and 30°S latitudes, The temperature of water is around 20°C] where diurnal and annual temperature ranges are very narrow.
- **Shallow water:** Coral require fairly good amount of sunlight to survive. The ideal depths for coral growth are 45 m to 55 m below sea surface, where there is abundant sunlight available.
- **Clear salt water:** Clear salt water is suitable for coral growth, while both fresh water and highly saline water are harmful.
- **Abundant Plankton:** Adequate supply of oxygen and microscopic marine food, called plankton [phytoplankton], is essential for growth. As the plankton is more abundant on the seaward side, corals grow rapidly on the seaward side.
- **Little or no pollution:** Corals are highly fragile and are vulnerable to climate change and pollution and even a minute increase in marine pollution can be catastrophic.

Types of Coral reefs

The following are types of coral reefs:

Barrier reef
Fringing reef
Atolls



Barrier reef:

Barrier reefs are separated from land by the wide width of water. For example, the Great barrier reef of Australia. It is more than 1500 miles in length.

Fringing reef:

It is widely found in tropical water. It grows close to shore and extensively under submerges shallow water sea.

Atolls:

Atolls are circular horseshoe-shaped coral reefs.

From where do Polyps get food?

- Most of the Polyps give habitat to algae called "Zooxanthellae" on their tissues.
- Polyps and Algae have a mutual symbiosis relationship.
- Polyps provide nutrients and habitat to Algae and help in the photosynthesis process.
- Zooxanthellae supply photosynthesis products such as carbohydrates to coral polyps.
- Zooxanthellae also provide beautiful colors to coral.
- Many polyps also get some food from floating ocean minerals directly.

Distribution of Coral reefs in India:

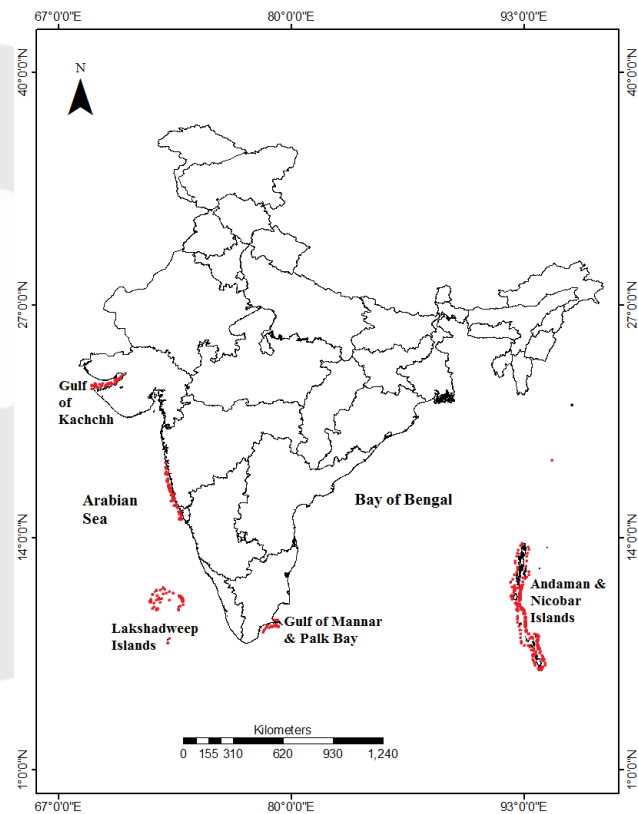
- Fringing reefs:
- Andaman and Nicobars
- Palk Bay
- Gulf of Mannar
- Gulf of Kutch
- Atolls reefs:
- Lakshadweep islands

Importance of Coral reefs:

- It is also called the rainforest of the ocean because of its biodiversity.
- Areas cover of coral reef is 0.1 % of the ocean cover but 25 % of marine species live in these areas only.

Coral bleaching:

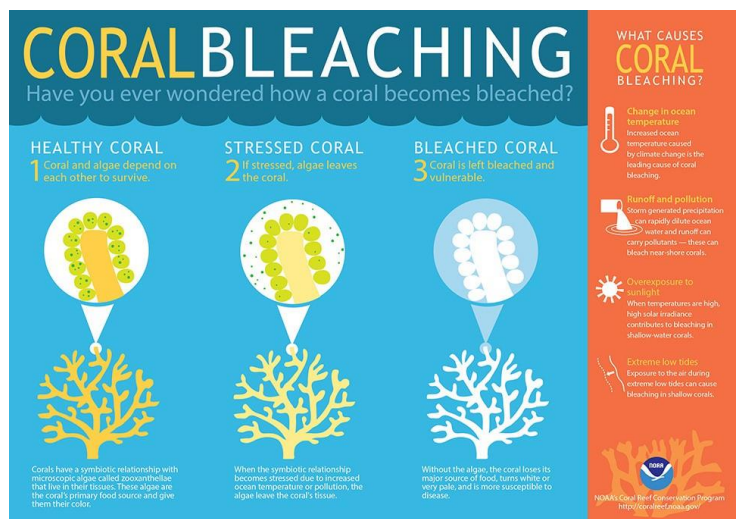
- When coral polyps are under stress then they expel algae (Zooxanthellae color provider). After leaving the algae, coral became white; this phenomenon is called coral bleaching.
- In 2016, a large scale of coral bleaching is seen in the Barrier reef.
- As per UN reports, 70 % of coral reefs of the earth are threatened categories.



Cause of Coral Bleaching:

The following are the reasons:

- Rise in seawater temperature.
- Ocean acidification
- UV radiation due to Ozone depletion
- Pollution in the ocean



Sources of Marine pollution:

Two major ocean pollutants are :

Chemical

Trash

Minor pollutants are:

Sewage waste, Hospital, Industrial discharge

Thermal pollution

Ocean mining

Coastal tourism

Ocean acidification due to acid rains.

Volcanic Eruption

Sedimentation

Submarine nuclear test

Atmospheric dust

Chemical Pollutants:

Industrial chemical

- Agriculture chemicals such as fertilizer and pesticides
- DDT
- Some pollutants like nitrogen and phosphorous cause algae bloom in the ocean that harms marine animals and tourism.
- Oil spills while shipping and drilling prevent sunlight to reach marine plants and prevent the photosynthesis process and the ultimate plant dies.

Trash:

- Plastics are the main pollutants in trash categories.
- Plastic pollution

Effects of ocean pollution:

- Depletion of oxygen content in water.
- Coral bleaching
- Algae bloom or Eutrophication
- Food chain disruption